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SEQUENCE LISTING <110> BIOGEN, INC. <120> April-A Novel Protein with Growth Defects <130> A049PCT <140> PCT/US98/19191 <141> 1998-09-11 <150> 60/079,384 <151> 1998-03-26 <150> 60/058,756 <151> 1997-09-12 <160> 4 <170> PatentIn Ver. 2.0

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Leu Thr Gln Gln Thr Glu Leu Gln Ser Leu Arg Arg Glu Val Ser Arg
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Leu Gln Gly Thr Gly Gly Pro Ser Gln Asn Gly Glu Gly Tyr Pro Trp 65 70 75 80

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Asp Asp Ser Asp Val Thr Glu Val Met Trp Gln Pro $\$ Ala Leu Arg Arg 130 135 140 $\$

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Thr Met Gly Gln Val Val Ser Arg Glu Gly Gln Gly Arg Gln Glu Thr
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Leu Phe Arg Cys Ile Arg Ser Met Pro Ser His Pro Asp Arg Ala Tyr
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Asn Ser Cys Tyr Ser Ala\Gly Val Phe His Leu His Gln Gly Asp Ile 210 215 Leu Ser Val Ile Ile Pro Atg Ala Arg Ala Lys Leu Asn Leu Ser Pro 240 235 225 230 His Gly Thr Phe Leu Gly Phe Val Lys Leu 245 250 <210> 3 <211> 917 <212> DNA <213> murine <400> 3 gaatteggea egaggeteea ggeeacatgd ggggeteagt eagagageea geeetttegg 60 ttgctctttg gttgagttgg ggggcagttc/tgggggctgt gacttgtgct gtcgcactac 120 tgatccaaca gacagagctg caaagcctaa \gcgggaggt gagccggctg cagcggagtg 180 gagggccttc ccagaagcag ggagagcgcc datggcagag cctctgggag cagagtcctg 240 atgtcctgga agcctggaag gatggggcga alattctcggag aaggagagca gtactcaccc 300 agaagcacaa gaagaagcac tcagtcctgc at ttgttcc agttaacatt acctccaagg 360 actctgacgt gacagaggtg atgtggcaac cagtacttag gcgtgggaga ggccctggag 420 gcccagggag acattgtacg agtctgggac actdgaattt atctgctcta tagtcaggtc 480 ctgtttcatg atgtgacttt cacaatgggt caggtggtat ctcgggaagg acaagggaga 540 agagaaactc tattccgatg tatcagaagt atgccttctg atcctgaccg tgcctacaat 600 agctgctaca gtgcaggtgt ctttcattta catcaa\u00e9ggg atattatcac tgtcaaaatt 660 ccacgggcaa acgcaaaact tagcctttct ccgcatggaa cattcctggg gtttgtgaaa 720 ctatgattgt tataaagggg gtggggattt cccattccaa aaactggcta gacaaaggac 780 aaqqaacqqt caaqaacagc tctccatggc tttgccttda ctgttgttcc tccctttgcc 840 tttcccgctc ccactatctg ggctttgact ccatggatat taaaaaagta gaatattttg 900 917 tgtttatctc ccaaaaa <210> 4 <211> 232 <212> PRT <213> murine <400> 4 Met Gly Gly Ser Val Arg Glu Pro Ala Leu Ser Val Ala Leu Trp Leu 15 5 10 Ser Trp Gly Ala Val Leu Gly Ala Val Thr Cys Ala Val Ala Leu Leu 25 20 Ile Gln Gln Thr Glu Leu Gln Ser Leu Arg Arg Glu Val Sèr Arg Leu

40

35





Gln Arg Ser Gly Gly Pro Ser Aln Lys Gln Gly Glu Arg Pro Trp Gln
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Ser Leu Trp Glu Gln Ser Pro Asp Val Leu Glu Ala Trp Lys Asp Gly 65 70 % 75 80

Ala Lys Ser Arg Arg Arg Ala Val Leu Thr Gln Lys His Lys Lys
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Lys His Ser Val Leu His Leu Val Pro Val Asn Ile Thr Ser Lys Asp 100 105 110

Ser Asp Val Thr Glu Val Met Trp Gln Pro Val Leu Arg Arg Gly Arg 115 120 125

Gly Pro Gly Gln Gly Asp Ile Val Arg Val Trp Asp Thr Gly Ile
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Gly Gln Val Val Ser Arg Glu Gly Gln Gly Arg Arg Glu Thr Leu Phe 165 170 175

Arg Cys Ile Arg Ser Met Pro Ser Asp Pro Asp Arg Ala Tyr Asn Ser
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Cys Tyr Ser Ala Gly Val Phe His Leu His Gla Gly Asp Ile Ile Thr
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Val Lys Ile Pro Arg Ala Asn Ala Lys Leu Ser Leu Ser Pro His Gly 210 215 220

Thr Phe Leu Gly Phe Val Lys Leu 225 230